Naval Surface Warfare Center Dahlgren

Dahlgren, Virginia
Superfund Program Site Fact Sheet

Type of Facility: Naval Federal Facility

Funding: Department of Defense
Defense State Memorandum of Agreement

Lead Agency: Navy

Site Description and History

The Naval Surface Warfare Center Dahlgren (NSWC) is on the western shore of the Potomac River, King George County, Virginia, approximately 25 miles east of Fredericksburg and 50 miles south of Washington, D.C. NSWC is divided into two principal sites: the Main Site, consisting of 2,678 acres, and the Explosive Experimental Area (EEA), consisting of 1,614 acres.

In 1918, NSWC was established with the primary mission of testing all ordnance materials. Since then, the mission of NSWC has evolved from the traditional proving ground to research-and-development operations. NSWC, under the jurisdiction of Naval Sea Systems Command, hosts the Naval Space Command, the Naval Space Surveillance Center, and the AEGIS Training Center.

The installation currently has many sites in the Installation Restoration (IR) Program being assessed according to a defined Site Screening Process; several have been found in need of further Remedial Investigation/Feasibility Studies (RI/FS). The objectives of the RI are to:

- identify the type, extent, and concentrations of contamination in soil, groundwater, surface water, and sediment
- determine whether, potentially, contaminants are moving from the sites to reach humans or wildlife
- identify and describe potential effects of site-related contaminants on human health and the environment

The first round of RI field studies focused on eight sites on the NSWC Main Site. Subsequently, other groups of sites which are designated the Priority 1 Sites and Priority 2 Sites have been assessed according to the defined Site Screening Process; the Priority 1 Sites have entered the RI study phase. These sites are located on both the Main Site and the EEA. These studies include:

- geophysical surveys to define the extent of landfills and to identify areas with buried metals
- sampling of existing and newly installed groundwater wells (6 to 20 feet deep)
- surface water (ponds, creeks, streams, and ditches)
- sediments (from creeks, streams, and pond bottoms)
- soils (surface and subsurface); reviews of site history and aerial photography
- ecological studies to evaluate risks to the biological environment from exposure to contaminants
- evaluation of site and chemical characteristics influencing where and how contaminants move

The following descriptions of the current IR study sites include summaries of what was found. All eight sites have moved to the Record of Decision (ROD) stage. RODs define the selected remedy for the most effective site cleanup. Long-term monitoring (LTM) is being conducted at five sites. Wetlands monitoring is being conducted at one site. Detailed descriptions and results can be found in the RI/FS and ROD reports. When completed, these reports are placed in the information repository (see the end of this fact sheet).

Site 2 - Fenced Ordnance Burial Area: This site was used from the 1940s into the 1980s for disposal of metal ordnance items that could not be certified explosive-free, even after the explosive was burned out of them. Buried items include ordnance hardware and casings, scrap metal, asbestos pipe wrappings, and batteries. Investigation of sediment, soil, surface water, and groundwater has confirmed the presence of metals, rubber, and plastics. The RI/FS of this site is complete, and the ROD has been signed. A major component of the RD/RA -- capping as a hazardous waste landfill -- is complete. Post Closure Care, including groundwater monitoring, is being conducted.

Site 3 – Ordnance Burn Structure: The Ordnance Burn Structure (known as USEPA SWMU-42) is located in the Powder Burn Area of the central part of the Mainside. This site is an open field, approximately 0.2 acres in size. A metal box and a burn pan were located at the site to support operations but have since been removed. This site began operation in the 1960s and was closed in September 1994. The site was approximately 6 feet by 6 feet and 4.5 feet high on a gravel base. Site 3 also includes a popping furnace structure, located east of the burn areas.

Operations at Site 3 consisted of thermally treating explosive or explosive-contaminated waste in burn pans, in a steel box, in the popping furnace structure, or on the ground surface. Wastes burned at Site 3 may have included RCRA-listed hazardous wastes and characteristic reactive wastes. The wastes may have included the following:

- Wastewater treatment sludges from the processing of explosives
- Spent carbon from the treatment of wastewater containing explosives
- Rocket Motors
- Explosive Powder, and

- Other Ordnance-Related Items.

A groundwater monitoring plan was initiated to address any potential groundwater contamination. Quarterly groundwater sampling was conducted to meet Virginia Hazardous Waste Management Regulations.

A PRAP was prepared for Site 3/44 recommending no further action be taken at this site (U.S. Navy, 2000a). The PRAP was advertised for public comment starting July 20, 2000 and ending August 19, 2000. No written comments were received during the 30-day public comment period, or the Public Meeting held on August 9, 2000. The Navy, USEPA and the Commonwealth of Virginia signed a Record of Decision (ROD) in September 2000 (U. S. Navy, 2000c).

Site 9 - Disposal/Burn Area: This inactive landfill operated from the early 1940s to 1984. Past operations consisted of typical municipal and miscellaneous waste disposal from housing and industrial operations, including a classified paper incinerator that produced ash. Large quantities of wood (packing crates and construction debris) were burned at this site. Investigations of surface water and sediments have confirmed the presence of pesticides, metals, and petroleum products. The RI/FS of this site is complete, and the ROD has been signed. All components of the RD -- isolating from groundwater with a slurry wall and capping as a sanitary waste landfill -- are complete along with the RA. Post Closure Care, including groundwater monitoring, is being conducted.

Site 10 - Hideaway Pond: This site is a 15-acre manmade pond created along a marshy drainage area flowing into Gambo Creek. Streams flow through the nearby 1400-area landfill drain into Hideaway Pond. Mercury is the primary contaminant found in Hideaway Pond. It was detected in fish and in surface water samples collected from the pond and tributaries draining Site 17 (1400 Area Landfill), which drains onto Site 10. Fish are sampled annually to monitor mercury levels. The pond is restricted to trophy and catch-and-release fishing. A ROD was prepared to evaluate alternatives for the most effective cleanup of this site. Mercury monitoring of fish and the implementation of institutional controls was the approved remedy.

Site 12 - Chemical Burn Area: This site was frequently used in the 1960s and 1970s. It was originally used for burning small amounts of decontaminated chemical warfare agent solutions. Fuel oil or gasoline was likely used to burn waste in the pit. In later years, lab chemicals and polymers were occasionally burned here. Investigations of soils and shallow groundwater confirmed the presence of solvents (chlorinated and non-chlorinated) and petroleum products.

The Remedial Investigation/Feasibility Study if this site is complete, and the Record of Decision has been signed. It calls for a bench scale version of the selected remedy -- Air Sparging and Soil Vapor Extraction -- that has been approved and is currently functioning.

Site 17 - 1400 Area Landfill: This inactive landfill was used from the early 1970s until about 1978. Municipal waste was periodically deposited, compacted, and covered. Metals are the primary contaminants of concern at this site, as mercury was detected in surface water samples from both tributaries adjoin it. Mercury in surface water from this site may be the source of mercury detected in Hideaway Pond (Site 10). In addition, groundwater and surface water at Site 17 were found to contain both metal and organic contaminants. The RI/FS of this site is complete, and the ROD has been signed. Vegetative soil cap and off-site disposal of sediments and phytoremediation were implemented as defined in the ROD. Post Closure Care, including groundwater monitoring, is being conducted.

Site 19 - Transformer Drainage Area: It is reported that during the 1950s about 1000 gallons of transformer oil were drained onto the ground at this site, behind the present Defense Reutilization and Marketing Office, Building 120B. Polychlorinated biphenyls (PCBs), typically found in transformer oils from this time period, were found at this site in surface soils. No PCBs were found in the groundwater. Since the RI, cleanup at this site has resulted in the removal and proper disposal of 282 tons of PCB-contaminated soils. This removal was completed in May 1995. Subsequently, an Addendum RI/FS for soils at this site was prepared to support the ROD. No further action was determined for the soils at this site. The final groundwater assessment will occur with Site 40, and adjacent site.

Site 25 - Pesticide Rinse Area: This site was previously used for rinsing and calibration of spraying equipment and rinsing of pesticide containers on the ground surface. The two areas of concern were a low-lying wetland, south of Building 946, and a past chemical dry well, west of Building 134. Investigations of soil, groundwater, and surface water sediments confirmed the presence of pesticides, primarily in surface soils. Since the RI, this site has undergone additional evaluation and study. Ultimately, a ROD was signed with the selected remedy of excavation and off-site disposal of contaminated soils, construction of a stormwater culvert to divert the cooling pond discharge to flow across the restored/created wetlands.

Site 29 - Battery Service Area: This site consists of a below-ground limestone pit used, from the 1950s through the mid-1980s, for the neutralization of battery acid from handling and recharging sulfuric acid batteries. The former pit is now covered by asphalt. Low levels of metals, typically found at lead acid battery recycling sites, were found in soil and shallow groundwater. Since the RI, cleanup at this site has included the removal of approximately 200 cubic yards of PHC- and lead-contaminated soils. Subsequently, an Addendum RI/FS was prepared to support the ROD which consisted of no further action.

Additionally, EE/CAs have been used -- prior to completion of the RI/FS -- to support faster cleanups through Removals at some sites. An EE/CA was used to identify contaminated soils at Site 03 and Site 44 -- two adjacent sites know as the Powder Burn Area -- for disposal off site as a Removal Action. Also, EE/CAs were done on two depleted uranium sites where Removal Actions are currently ongoing.

Site 44 – Rocket Motor Pit: The Rocket Motor Pit (known as USEPA SWMU 41) is located next to the Ordnance Burn Structure (Site 3), north of Bagby Road in the Powder Burn Area in the central part of the Mainside. It is approximately 24 feet by 36 feet, with a depth of approximately 5 feet. The facility applied for a RCRA permit to operate the site, however, operated under interim status until September 1994 when the site was closed.

One RI/FFS was prepared for the combined Sites 3 and 44 because the sites are located closed together and were used to perform similar types of operations. The RI/FFS was performed to assess residual risk following the removal action and groundwater monitoring.

A PRAP was prepared for Site 3/44 recommending no further action be taken at this site.

Site 58 – Building 1350 Landfill: Building 1350 Landfill (known as USEPA SWMU 134) is located on Mainside adjacent to Kennel Road and extends down into Gambo Creek. The site is basically an extension of the Disposal Burn Area (Site 9). This site was in use during the same period as the Disposal Burn Area (from the 1940s to 1970s).

RI field activities included the installation of one groundwater well at the center of the landfill Site 58. A soil boring was taken at the well location.

A Final Closure Design for Site 9 (which included Site 58) was completed in February 1999. The Remedial Action to remove debris at Site 9 started in March 1999 and was completed in June 1999. A Final Closure Report for Site 9 was submitted in November 2000. The Closure Report documents the construction process and describes the activities that were performed in executing the closure of the landfill, marsh areas, and Site 58. The Long-Term Monitoring Plan for Site 58 is included with the plan for Site 9.

Current Site Status

NSWC was proposed for the National Priorities List (NPL) on February 7, 1992, and on October 14, 1992, was added to the NPL by the Environmental Protection Agency (EPA). Currently, the Federal Facilities Agreement under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 120 (September 1994), establishes the procedural framework and schedule for RI studies and developing, implementing, and monitoring appropriate response actions at NSWC. At present, Appendix A consists of the following. Eleven Priority 1 sites. Six priority 2 sites, Nine Priority 3 sites and six Priority 4 sites. At present, Appendix B consists of thirty-one sites.

Community Relations

Community relation's activities are conducted throughout the IR process. In September 1992, a Technical Review Committee was established, including two representatives

from the public. This group was the predecessor to the Restoration Advisory Board (RAB) which was created in October 1994. The RAB provides a forum for discussion and information exchange between community members, the Navy, EPA, and VDEQ. It gives people who might be affected by waste cleanup at NSWC an opportunity for participation. The RAB is not a decision-making body, but is intended to provide diversity of perspective by including citizen participation. RAB meetings are open to the public and are held in easily accessed public locations, in the evening, so people will find it convenient to attend. Meetings are announced in the Journal for King George County and in the Free Lance-Star, at least two weeks in advance. RAB leadership is provided jointly by a Community Co-Chair and a Navy Co-Chair.

A Community Relations Plan outlining a program to provide communication and information exchange opportunities was prepared in 1992. It will be updated when RI results are approved. It will include the names and phone numbers of RAB members so the public can call to discuss issues of interest. A fact sheet describing various aspects of the IR Program has been distributed to a mailing list.

VDEQ Representative	**Information Repository**
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